Stormwater Finance Learning Module Chapter 2: Establish A Comprehensive Program Plan
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Subchapter Headings:
2.1 Why Do You Need A Comprehensive Program Plan? (link slide a)
2.2 Determine The Scope Of Your Current Program Assets and Activities (link slide b)
2.3 Developing Your Plan For the Future (link slide c)
2.4 Using Asset Management To Inventory, Manage, and Help Budget Your Program Needs
2.5 Working With Fellow Departments to Integrate Stormwater With Other Public Projects

<u>Module Navigation</u>

Chapter 2: Establish A Comprehensive Program Plan		
Slide no.	**Layout notes**	**Content**
1	Module title slide with side foto	**Chapter 2: Establish A ~~Comprehensive Program~~ Long Term Stormwater Plan** In Chapter 1 we discussed the importance of advanced planning and community involvement to set the stage for ~~a successful funding campaign~~ a successful finance strategy. A critical element of advance planning is creation of a detailed program plan that accounts for all your stormwater program assets and activities and for their upkeep and management over time.
2	Text with drop ins of each bullet	This plan provides the foundation you need to: - explain your stormwater program to the public and gain their support, - fully assess stormwater program costs, funding needs, and funding options, and - develop a comprehensive stormwater financial plan to obtain the funding you need when you need it.
3	Text w foto	**Chapter Layout** 2.1 Why Do You Need A Comprehensive Program Plan? (link slide a) 2.2 Determine The Scope Of Your Current Program Assets and Activities (link slide b) 2.3 Developing Your Plan For the Future (link slide c) 2.4 Using Asset Management To Inventory, Manage, and Help Budget Your Program Needs 2.5 Working With Fellow Departments to Integrate Stormwater With Other Public Projects
4		**2.1: Why Do You Need A Comprehensive Program Plan?** MS4 programs vary enormously in their ability to plan for their programs' futures. While some programs have plans that account for all current and needed future activities and can explain why these elements are critical to success, many programs have difficulty creating comprehensive short and long term plans. Particularly in small to medium-sized communities, stormwater programs lack secure, dedicated funding tailored to their actual needs, and therefore do the best they can with modest, unreliable funding. As a result, these programs are often understaffed and have little spare time for program and budget planning. This presents a *classic dilemma*—they are too busy with day-to-day challenges to plan ahead, but can never secure adequate funding because they cannot plan and budget for the future.

Commented [GH1]: Most communities have a "Comprehensive Plan" for the whole city which expresses and regulates public policies on transportation, utilities, land use, recreation, and housing (I googled it). It's an urban planning term. I think it's confusing if we call this work by the same name.

I like Long Term Stormwater Plan, especially if we are going to refer to the Guide (and eventually the TA reports) but we can get input on what to call it.

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Chapter 2: Establish A Comprehensive Program Plan		
Slide no.	Layout notes	Content
5	Text with boxes for each bullet point that send you to a linked box with the bullet text	**Why A Long Term Planning Perspective Is Important** Many communities plan only for the next few years, often for work required during an immediate 5-year NPDES permit term. However, taking a longer-term view of your program goals, needs, and likely investments will help align your plan with other important processes: - *Infrastructure Life Cycles:* Infrastructure planning, funding, design, and construction is a lengthy process representing long term investments of public or private funds. - *Community Growth Planning:* Taking a longer-term view will help mesh your stormwater plan with other community planning efforts, such as development master plans, that often identify where and how communities will grow and redevelop over a 10-20 year period. - *Financial Planning Horizons:* Investing in new infrastructure (in addition to carrying out current program activities and maintaining what you already have) entail long term financing arrangements to repay loans, bonds, and/or public-private project agreements over time. - *Regulatory Compliance:* Many NPDES stormwater permits require communities to demonstrate what specific projects and activities will be implemented over time and how those actions will result in meeting water quality protection mandates. The implementation time horizons in many permits exceed the current 5-year permit term. - *Leadership Changes:* As elected leaders turn over in a community based on election cycles, which can often ripple into changes of department heads, a long term stormwater plan can provide some stability and continuity to the stormwater program, especially when the plan was developed with significant public involvement and reflects the desires of the residents and the local businesses. - *Environmental Changes:* Many communities face substantial challenges for their stormwater systems from the effects of population growth and likely changes in precipitation and flooding patterns, sea level rise, and global warmingother effects. Anticipating these effects through longer term planning will likely improve your ability to become resilient in the face of these changes in your operating environment.

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Slide no.	Layout notes	Content
6		**What Can A Better Long Term Stormwater Program Plan Do For Me?** Developing a comprehensive long-term community stormwater plan can help you integrate stormwater management with your community's broader plans for economic development, infrastructure investment and environmental compliance. Through this approach, your community can prioritize actions related to stormwater management as part of capital improvement plans, master plans or other planning efforts. Early stormwater planning as

		communities develop provides significant long-term cost savings while supporting resilience, economic growth and improved quality of life.

7		**Comprehensive Planning Leads To Sustainable Funding**
		A comprehensive plan is also critical to building a viable funding strategy. The plan will help you:
		   - Articulate and assess your program purposes, activities, priorities, and assets
		   - Explain why your work is critical, how you effectively do it, and why you need additional, dedicated funding
		   - Teach the public and key opinion leaders about the value sound stormwater management brings to a community, and
		   - Identify key issues and concerns that will need to be addressed and key people who should be engaged when you mount your funding campaign in earnest
		(link to chapter 1)

8		**Is This Different From My Current Stormwater Management Plan (SWMP) or Stormwater Pollution Prevention Plan (SWPPP)?** It depends. Many cities have a stormwater management plan that focuses on what the City needs to do to meet the requirements of its NPDES MS4 permit. Some plans are fairly basic and lay out what they do now to meet the 6 minimum measures (see, for example, Waynesboro, VA's Stormwater Program Plan accounts for its activities to implement the 6 minimum measures required under the VA Phase II MS4 permit) https://www.waynesboro.va.us/DocumentCenter/View/7176/Permit-Cycle-2-Stormwater-Program-Plan

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Slide no.	Layout notes	Content
9		Other communities have more detailed existing- plans that account for responsibilities beyond the minimum measures and that are more forward looking. For example, the Blaine, MN's Stormwater Pollution Prevention Program plan provides: - a more detailed description of how it implements its program components, - how it relates to other local programs and processes, and - a self-assessment discussing its current program and what it plans to do in the future. https://www.blainemn.gov/DocumentCenter/View/359/Stormwater-Pollution-Prevention-Program-PDF?bidId=
10		While these types of plans do a good job accounting for permit compliance related activities and current program activities, they may not: - provide a thorough inventory of current program assets, - account for the full range of stormwater related services provided by the municipality - address future program needs and strategies, - provide a basis for determining present and future funding needs to build and sustain the program. *A Comprehensive Long Term Stormwater Plan Does More!*

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11		A comprehensive long term stormwater plan combines the regulatory compliance activity plan with: - a rigorous accounting of current program assets, infrastructure, resources, and services, - plans to maintain and replace these assets and infrastructure as needed, and - a projection of future program needs and how they will be addressed - an evaluation of the community's development policies, codes and ordinances for opportunities to implement incentive programs for residents and businesses. - a process to evaluate opportunities for improved stormwater management of existing public properties and facilities and robust plans for optimize stormwater management for new public projects that can serve as an example to the private development community. Ideally, this more comprehensive plan is designed to align with related municipal capital investment plans, master plans, and plans of other departments (parks, roads, etc.). (See Subchapter 2.5 LINK)
12		This is more than an inventory of your pipes, equipment, and program activities. A thorough plan: - *Sets Goals:* It requires thoughtful articulation of your goals, strategies, and methods that addresses your current program and where you need to be in the future. - *Sets Timeframes:* Timeframes for different aspects of your plans will vary but you need to be future-focused. *You will be unable to create a persuasive financing plan if you don't have a thorough stormwater program plan with solid documentation.*
13		**2.2. Determine The Scope Of Your Current Program Assets and Activities** This section discusses the plan elements and some approaches in more detail.
14	Text linked to boxes with each bullet category	**What Process Should I Follow To Develop a Comprehensive Program Plan?** EPA's "Community Solutions for Stormwater Management: A Guide for Voluntary Long-Term Planning" identifies 4 basic steps in the plan development process: https://www.epa.gov/green-infrastructure/community-solutions-stormwater-management-guide-voluntary-long-term-planning *1. Assess Where You Are Now* - Identify your community goals regarding water quality protection, flood risk reduction, improvement of community spaces like parks and streets, and/or water supply augmentation - Describe relevant water quality or human health issues that need to be addressed, including restoring polluted waters, protecting beaches, restoring creeks and wetlands, and protecting valued habitat. - Describe the community's existing stormwater systems and assets, and their performance *2. Analyze Opportunities* - Determine how you will communicate with and involve stakeholders in your process (see Chapter 1 for details)

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		- Identify, evaluate, and select stormwater management alternatives based on the goals established in the previous step (this enables you to evaluate a range of options for future work to improve how your community manages stormwater and associated assets). 3. *Move Toward Implementation* - Establish a process for proposing funding plans and strategies. - This is the time to consider costs and potential funding strategies, and deciding what type of funding approaches to pursue. This step is covered more in Chapters 3, 4, and 5. - Determine how you will evaluate your plan and project implementation activities, and make adjustments as you go.
15		**The Basic Framework for A Comprehensive Plan- Why, How, and What** We recommend structuring your plan to go beyond a list of projects and activities. Your plan should be designed to present where you are going, and why. A good plan will explain: - Why it is important to manage stormwater - How your community plans to it (i.e., what is your strategy) - What specific activities and projects will be necessary to carry out that strategy.
16		**Include a Summary** As your plan may be quite detailed and lengthy by the time you are finished, we recommend incorporating an easy-to-ready summary up front that will enable the public and busy decision makers to gain a good sense of your plan through a quick read.
	Text	**Start With Your Existing Plan, And Add To It** Your existing stormwater management program plan is the logical starting point for developing a more comprehensive plan. It may take significant time and effort to expand your existing plan to fully account for your goals, strategies, assets, and future plans. You should critically examine your current plan and ask whether it incorporates the following key "ingredients": *WHY, HOW, and WHAT.*
17		**Explaining Why- Your Program Goals and Objectives** - It is important to start by explaining why we need sound stormwater management before getting to the details about how we accomplish this and what specific projects and activities need to be funded. - As Simon Sinek says in his pathbreaking Ted Talk, "People don't buy what you do; they buy why you do it." https://www.ted.com/talks/simon_sinek_how_great_leaders_inspire_action - How do you do this? Explain your program's purpose in terms of the values and services it delivers to customers in areas they care about. - For example, you might explain the importance of ensuring streams and beaches are clean for swimmers, streets are free of trash, and streets and homes are not flooded during big rainfall events. - Think in terms of your "elevator speech." If you cannot briefly describe why your program is important to the community, you are probably not ready to argue successfully for new, dedicated funding.

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Slide no.	Layout notes	Content
18	Subchapter navigation slide with explanatory text	**Expressing Your Goals In Terms That Work** As discussed in Chapter 1, it is not always obvious how to express program goals in ways that the public and key decision makers will support. *Compliance?* While regulatory compliance is a valid objective and often a key program driver, it is unlikely to resonate with the public as a sole or primary motivating goal for a plan. *Water Quality?* Perhaps surprisingly, appealing solely to the desirability of cleaner water is unlikely to motivate community members to support your plan. Without lots of preparation, members of the public often don't understand the connection between clean water and safe swimming or healthy fish. *Themes That Resonate!* Successful communities broaden the range of program goals and purpose beyond water quality to include other stormwater management benefits that resonate with residents. Defining your "why statement" depends on listening to your customers to understand what motivates them. Some communities care a great deal about a revitalized riverfront, flood control or increasing property values, while others might be more interested in the value of clean beaches or swimming areas. *Think Long Term* We suggest you adopt a longer term perspective in setting and articulating goals for your program (e.g., Where do we want to be in 10 years?). Most people want to know you've thought ahead about where we need to be down the road, not just next year.
19		**Explaining How- Describe your program's strategy** Explain your overall program approach (the general areas where you invest time and resources). Show how program implementation benefits your customers now and in the future (and the risks you face if you don't). Use specific examples to illustrate the types of work you do (and need to do in the future) and how they address your customers' interests and priorities. It is often helpful to describe what you do paired with why you do it: - Street sweeping → clean streets - Trash control projects → clean beaches and lakes free of litter - Basins to capture/infiltrate stormwater →reduce flooding - Street/sidewalk projects (e.g., vegetated swales) → filter pollutants and trap water to increase supply - Inspection programs → prevent pollutants fouling streams and harming wildlife We suggest a medium-term perspective- Develop a detailed strategy for next 3-5 years and sketch of strategy for following 5 years.
20		**Explaining What- Describe your specific assets, activities and projects** Start by inventorying your existing assets, projects, and activities. This enables you to discuss your future operations and maintenance needs to keep your existing program working well. - This requires more than listing your pipes, pumps, and trucks. A comprehensive asset and activity inventory includes: - *Hard Assets*: Storm Drain System (pipes, pump stations, structures), Public and Private structural or green infrastructure BMPs, Equipment (trucks, tools, monitoring devices...)

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		- *Soft Assets*: Program activities (e.g., public participation, inspections, surveillance, monitoring, pollution prevention, project review, maintenance); municipal ordinances, policies, and procedures, databases and software systems, customer hotlines, GIS data; personnel, your department relationships and reputation - *Natural Assets*: Receiving water, stormwater discharges, city property
21		**More Than Pipes and Pumps** This asset list goes beyond traditional definitions of physical assets, but it is important to account for all the tools you and others use to address stormwater in your community, including the assets you are working to protect. Another way to think about this is to recognize that taking care of pipes and pumps will not get the job done, now or in the future. We need to tell the whole story about what we do now and what more we need to do to fully reach our stormwater, and broader urban water management objectives.
22		**Asset Management ~~Planning~~ Aids Planning** We highly recommend investing in an asset management system approach to support your program planning approach. Your investment in Asset Management Planning will yield huge dividends in the future as it will help you develop your comprehensive plan, make system management more efficient and predictable, and define your funding needs. For more information on Asset Management, see Section 2.4
23		**Be Comprehensive In Presenting What You Do** Be thorough You need to account for *all* of your program's responsibilities, activities, assets, and projects that need attention, action, and funding now and in the future. Many programs make the mistake of not accounting for activities managed through other departments or that are not routine parts of core staff assignments.
24		**Common Elements of Municipal Programs** Most municipal stormwater programs need to account for the following responsibilities: • Administration: coordination, SWMP development, annual reporting, ~~public education and~~ personnel training, fee collection and customer service, grants administration, debt service; databases and software systems • Capital projects: design, implementation/construction • Regulation and Enforcement: MS4 Permit compliance, system inspections, IDDE, ESC inspections • Engineering and Master Planning: plans, SWPPS, CIP design, mapping, code development and zoning support • Operations and Implementation: O&M, street sweeping, culvert replacement, catch basin cleaning, emergency repairs, vehicle/facility maintenance • Outreach and involvement: public education activities and public involvement processes • Monitoring: Catchment assessment, outfall monitoring, activity tracking and reporting (HWG, 2011; NAFSMA, 2006)

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25		**2.3: Developing Your Plan For the Future** A comprehensive plan needs to look to the future and project future program needs. This section discusses how to do this.

26		**Needs May Change Over Time**
		As discussed in Chapter 1, program needs, priorities, and requirements often change over time:
		    - new water quality problems associated with stormwater pollutants may be detected
		    - infrastructure may decay and require renovation or replacement
		    - flooding may occur in unexpected places, increasing demands to better manage wet
		       weather flows
		- your customer's demands may change—for example, they may want greater investment in green spaces and changes in urban landscapes

27		**Elements of Future Work** Projecting future program needs is not a simple task. You need to ensure your plan accounts for future work to: - operate, maintain and, as needed, replace assets you have now - continue operating and, as needed, adjust your people programs (outreach, inspections, customer service, etc.) - develop and implement new projects and program initiatives to address new requirements and opportunities.
28		**Planning Horizon** We recommend that, at a minimum, you should identify what you need to do: - *Soon* Work in the forseeable future (new capital projects and other program actions) within the next 5-10 years. - *Later* Likely larger scale projects and initiatives, (especially large capital projects) that require longer to plan, fund, and implement over a 10-20 year time period.
29		**How Do You Predict Future Needs?** The past helps predict the future. If you develop a thorough inventory of existing assets, projects, operation and maintenance schedules and activities, this will provide the starting point to project what it will take to continue operating and maintaining those elements of your program. Much of the starting information you will need should be in your existing stormwater management program plans.

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30		Asset Management Planning systems are a great help in projecting future capital needs to replace major assets and infrastructure. Section 2.4 discusses how cities used their AMP systems to help prepare their long term plans.
31		As you project future program needs, make sure to discuss potential changes in your operating environment that would affect future expectations of your program: - Regulatory changes (e.g. new requirements to address TMDLs) - Opportunities for multi-purpose projects - Large development or redevelopment plans - ~~Climate-related changes and o~~Opportunities to improve resilience to flooding or drought or other adapt<u>ations.</u> ~~or mitigate adverse effects.~~
32	Image and text	**Defining Your Future Needs – Where Should You Look?** If your community has not engaged in longer term program planning before, preparing a comprehensive program plan will require greater effort. Even if you have done this before, there are many useful sources of information on future program needs: - *Master Plans:* Many cities' Master Plans, <u>Capital Improvement Plan,</u> ~~General~~ <u>Comprehensive</u> Plans, and Community Development Plans provide critical information concerning future development and redevelopment plans that help identify new capital improvement needs for stormwater management infrastructure. - *Water Resource and Watershed Management Plans:* Many cities have conducted comprehensive water resource or watershed management planning processes intended to assist more integrated approaches to resource restoration and protection. For example, Minneapolis, MN's Water Resource Management Plan provides detailed evaluations of water resource issues, needs, and local programs that address water resource protection. http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/wcmsp-211068.pdf - *Local Hazard Mitigation Plans:* These plans list all the potential hazards and natural disasters that a community might experience and describe the actions that the community will take to reduce or mitigate those threats. Flooding is one of the most common natural disasters that communities face and the impact to the community can be significant and costly. The link between stormwater and flooding, and their associated planning and management requirements, provide communities with the opportunity to consider multi-benefit solutions such as green infrastructure. Integration of stormwater into local hazard mitigation plans can open the door to FEMA funding sources. Storm Smart Cities: Integrating Green Infrastructure into Local Hazard Mitigation Plans. https://www.epa.gov/sites/production/files/2018-04/documents/storm_smart_cities_508_final_document_3_26_18.pdf

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		Green Infrastructure Plans: Cities are increasingly using green infrastructure planning methods to develop strategies for protecting, maintaining, increasing, and connecting green spaces, waterways, and valuable habitat. Since many green infrastructure approaches prove effective in managing stormwater issues, green infrastructure plans can provide a detailed list of future projects that will need to be designed, funded and implemented over time. For example, the Conservation Fund has aided many communities, like Cecil County, MD, in developing GI plans. See https://www.conservationfund.org/our-work/strategic-conservation-planning/our-projects/green-infrastructure-plans for examples. *Combined Sewer System Long Term Control Plans*: Some cities have both combined sewer and separate stormwater systems. These cities often develop detailed long term control plans (LTCPs) that account for system assets and activities, assessments of future system needs and alternatives, and specific plans for future infrastructure investments. These plans often provide much of the information a comprehensive stormwater program plan requires. For example Philadelphia, PA's LTCP provides detailed information concerning its initiatives to expand green infrastructure approaches to stormwater management. http://www.phillywatersheds.org/what_were_doing/documents_and_data/cso_long_term_control_plan - *NPDES Permits and SWPPs*: Your NPDES permit may establish requirements to address challenging pollution control issues that will require investment in improved controls over time. Many permits require permittees to develop stormwater program plans (SWPPs) that project future project needs and schedules for their implementation.
33		**Linking Stormwater Management Plans to a Successful Fee Initiative in Culver City, CA** The Los Angeles County MS4 permit includes stringent requirements to implement controls necessary to address a wide variety of water quality impairments throughout the Los Angeles Basin. The permit enabled cities to work together at a watershed scale to identify projects and programs to address these specific pollutants, and most cities decided to follow this compliance option. They developed detailed watershed management program plans that define specific projects and schedules to address these pollutants. The City of Culver City used these plans to help motivate its residents to approve a new fee funding initiative, Measure CW in 2016. One reason for Culver City's success was that it could point to specific project plans and needs to explain why the funding was needed. The Measure CW parcel tax passed with 74% approval. https://www.culvercity.org/city-hall/information/election-information/ballot-measure-information/clean-culver-city
34		**Examples of Solid Long Term Plans** Several cities have developed excellent, comprehensive long term program plans, often based on asset management planning systems and ambitious long term planning processes.

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		San Diego CA- The City of San Diego prepared a series of long term water quality improvement and asset management plans that are guiding its long term initiative to make large investments in improving how it manages stormwater and meets regulatory and other water management objectives. https://www.sandiego.gov/stormwater/plansreports

Grand Rapids, MI The City of Grand Rapids developed a detailed Stormwater Master Plan that combines a detailed accounting of current program assets and activities with a long term action plan for a 20 year period. https://www.grandrapidsmi.gov/files/assets/public/departments/environmental-services/files/stormwater/environmental-services-resources/stormwater-misc/stormwater-master-plan-may-2013.pdf |
| 35 | | **For More Information on Program Planning**
There are many excellent sources of information on program planning; here are just a few:

- EPA's "Evaluation of the Role of Public Outreach and Stakeholder Engagement in Stormwater Funding Decisions in New England: Lessons from Communities" https://www.epa.gov/sites/production/files/2015-09/documents/eval-sw-funding-new-england.pdf
- University of Maryland Environmental Finance Center's "Stormwater Financing Manual: A Process for Program Reform" https://efc.umd.edu/assets/stormwater_projects/2efc_stormwater_financing_manual_final_(1).pdf
- American Rivers' "When a bandaid's not enough: Implementing Stormwater Utilities in the Great Lakes Basin" https://www.americanrivers.org/conservation-resource/stormwater-utility-toolkit/ |

Slide no.	Layout notes	Content
36		**2.4: Using Asset Management To Inventory, Manage, and Help Budget Your Program Needs**
Aging infrastructure is a significant concern for the utilities, service districts, municipalities, and counties responsible for operating and maintaining stormwater, wastewater, and drinking water systems throughout the United States. Many drinking water and wastewater utilities have developed and implemented formal asset management programs (AMPs) to reduce unexpected, expensive, and reactive repairs and increase overall system performance. However, few stormwater programs have made the commitment to build AMP capability.
37		Despite the demonstrated benefits of AMP implementation, the challenges and barriers that can come with developing a new AMP — or integrating existing asset management tools into a formal, centralized AMP — can seem overwhelming to programs beginning the process. In response, EPA developed the paper "Asset Management Programs for Stormwater and

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		Wastewater Systems: Overcoming Barriers to Development and Implementation." This paper presents information obtained from case studies and input from utilities at various stages of AMP implementation. ~~to organize your stormwater assets and activities for each component of the scope.~~
38		**What Is an Asset Management Program?** Asset management is a process stormwater programs can use to make sure that planned maintenance can be conducted and capital assets (pumps, pipes, etc.) can be repaired, replaced, or upgraded on time and that there is enough money to pay for it. Asset management also can guide the use of staff and other "soft" assets through which your programs deliver services to the community and manage your systems.
39		Asset management is the practice of managing infrastructure capital assets and soft assets to minimize the total cost of operating these assets while delivering the desired service levels. Many utilities use asset management to pursue and achieve sustainable infrastructure. A high-performing asset management program includes detailed asset inventories, operation and maintenance tasks, and long-range financial planning.
40		Each program is responsible for making sure that its system stays in good working order, regardless of the age of its components or the availability of additional funds. Asset management programs with good data—including asset attributes (e.g., age, condition, and criticality), life-cycle costing, proactive operations and maintenance, and capital replacement plans based on cost-benefit analyses—can be the most efficient method of meeting this challenge.

41		**Five Core Questions**
		Asset management is centered on a framework of five core questions, which provide the foundation for many asset management best practices:
		    1. What is the current state of my assets?
		    2. What is my required "sustainable" level of service?
		    3. Which assets are critical to sustained performance?
		    4. What are my minimum life-cycle costs?
		    5. What is my best long-term funding strategy?

42		**How Do Asset Management Programs Work?** Asset Management Programs (AMPs) are usually operated through computer-enabled data management systems that may range from basic spreadsheets to complex programs designed specifically to assist asset tracking and management. Many are linked with GIS-based systems that enable detailed geographical analysis of asset locations, condition, and risks to guide management decision-making. These systems vary in the degree of detail they track and the extent to which they are interactive. Some communities develop their own systems; while many others buy off-the shelf software systems. More advanced systems are designed to be useable by field personnel to assist in tracking results of inspections, complaint responses, and maintenance activities. Selection of Asset Management software is discussed in "Asset Management Programs for Stormwater and Wastewater Systems: Overcoming Barriers to Development and Implementation", pp 12-14. https://www3.epa.gov/region9/water/npdes/asset-mgmnt/pdf/Overcoming-Barriers-to-Development-and-Implementation-of-Asset-Management-Plans.pdf
43		**How Do I Develop Asset Management Capability?** The EPA AMP development guide recommends that communities take the following steps to choose and implement an asset management system:

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		1. Identify Overall AMP Scope a. Identify the types of assets that comprise the overall system and consider the relationship of each type of asset to the system's overall performance of the system. b. Prioritize assets based on the functionality of the system and the desired level of service. c. In addition to hard assets, consider other types of assets (e.g., natural and soft) to enhance overall system performance. *It is particularly important for stormwater programs to account for the full range of hard and soft assets that represent your program activities, resources, and responsibilities. In most communities, stormwater management depends on far more than hard intrastructure control and treatment processes to attain success in meeting program goals.* *2. Establish the Desired Level of Service* a. Establish a reasonable level of service in order to understand which assets are needed to provide that service to customers. b. Establish a level of service that also accounts for NPDES permit compliance needs. c. Develop and routinely evaluate performance measures to track whether the level of service objectives are being met. *3. Choose and Implement Asset Management Software* a. Determine whether the size of the utility's AMP warrants the need for unique asset management software (existing tools and data systems may not warrant need for additional software). b. Choose or develop a software product with the capabilities needed to ensure the functionality of the system, as well as help meet both level-of-service and regulatory objectives. c. Utilize a combination of various information sources — a list of critical projects (according to assets' score and rank), evaluation of recent closed-circuit television inspections, work order history, cleaning history, institutional knowledge — in deciding to authorize a repair/replacement or conduct further monitoring. d. Consider a product's ease of use by their staff and ease of incorporation into existing AMP tools and practices. *4. Catalog Assets* a. Invest time upfront in cataloging assets to help understand the components of their systems. b. Establish a utility-specific standard for defining, identifying, and storing asset data to keep those data consistent and correctly labeled. *5. Score Assets* a. Recognize the appropriate metrics, standardize a methodology, and choose a perspective to create a consistent system. b. Evaluate the following components to determine an asset's overall score: (1) Condition, (2) Remaining useful life, (3) Probability of failure, and (4) Consequence of failure (or "criticality"). *6. Continue AMP Development and Adjustment* a. Establish internal evaluation and benchmarking standards using a set of predetermined criteria.

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		We suggest you consult the AMP guide for more detailed information about the AMP development process.
44		**What Benefits Do AMPs Provide?** The application of an AMP, when properly managed and funded, has proven to help utilities meet both regulatory and level of service objectives. An AMP system will help you: (1) reduce and stablilize long-term costs to keep facilities performing at their desired service levels — making expenditures from focused repairs to general replacements only at the most economically beneficial points in the facilities' service lives, (2) more accurately integrate new project planning with existing asset O&M, and (3) provide financial transparency to rate payers for major capital expenditures and rate increases.
45		**Preventing Surprises** The overarching outcome of AMPs is first the reduction — and ultimately the prevention — of the facility failure "surprises" that cause havoc with customer needs and utility agency budgets. AMPs have proven to reduce environmental impacts from those occurring under traditionally managed "wait 'til it breaks and then fix it" approaches to facilities maintenance and renewal. For example, enhanced stormwater system maintenance can reduce pipe failures and blockages (and resulting back-ups and overflows) and improve implementation of softer implementation strategies (e.g. plan review and facility inspections) to ensure program goals and commitments are met.
46		**Linking AMP and Your ~~Comprehensive~~ Long Term Stormwater Plan** Once implemented, your AMP should provide much of the detailed information need to populate a comprehensive plan's: - inventory of program assets, resources, and responsibilities, - plan for system operations, maintenance, and improvement over time, and - projections of future capital investment needs to replace and improve both green and grey stormwater management infrastructure.
47		**Summarizing Costs** To assist in developing your funding plan and strategies for securing additional funding, you will likely need to summarize present and future costs of program implementation in terms of the different main components of your program.
48		**How One City Organizes its Program Budget** | Service	Description
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Debt Servicing	Annual amount paid on any bonds that were sold to finance stormwa improvement projects.
Capital Improvements	Amount of money required to initiate new physical improvements to storm sewer systems and other BMP projects for either improvemen expansion.
Maintenance and Operations	Cost includes the cost of labor, material and equipment for City crew to perform OM&R for the storm sewer system, including costs of cre to clean inlets, respond to street and viaduct flooding, and repair sto sewer inlets and manhole frames.	

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		Storm Sewer Cleaning	This work is competitively bid each year and is completed by privately contracted firms. Includes cleaning and televising the pipes in the City's Storm Sewer System.	
		Erosion Control, Grading and Permitting	This is a potentially self-supporting activity where the fees charged for the permits equal the City's cost to review and issue the permits. Erosion control, grading, and drainage permits are issued whenever new construction exceeds municipal standards for surface disruption by construction.	
		NPDES Compliance	Cost of actions to carry out minimum control measures City plans under NPDES permit (public participation, LID actions, etc)	
		Service Requests	Cost of City staff time to help property owners find solutions to drainage problems on their property.	
		Sustainability Provisions	Cost of improvements in sewer systems that increase efficiency or that reduce runoff from properties. Costs of administering any incentive programs in the forms of either credits or deductions for property owners who actively work to reduce runoff should be factored into this figure.	
		(Source: MAPC, 2014)		
49		**San Diego's Use of Asset Management As the Foundation For Long Term Planning** *The Challenge* San Diego, CA faces daunting future stormwater management challenges. Throughout the 2000's, the San Diego Regional Water Board adopted various TMDLs for pesticides, nutrients, metals, bacteria, and sediments for local waterbodies. As indicated in the TMDLs and reflected in the MS4 permit, responsibility for reducing pollutant loading in these waters falls partially to the City of San Diego and its stormwater management program. These requirements have come simultaneously with tightening national standards for stormwater management for both water quality and flood control. In 2008, the City adopted a zero-based budgeting approach requiring staff to justify every dollar requested every year. The stormwater program found it did not have the detailed information needed to justify exactly how proposed expenditures would be spent and lead to regulatory compliance.		
50		*The Solution* In order to anticipate and justify current and projected costs of complying with federal, state and local stormwater regulations, the City of San Diego developed an integrated Watershed Asset Management Plan ("WAMP") for its stormwater management system.		
51		**Assessing and Prioritizing Resources** The first element of the WAMP was to assess the current inventory, costs, and condition of the system. In the plan, assets are categorized as "hard," "natural," or "soft" and valuated accordingly. INSERT AMP GRAPHIC FROM EPA CASE STUDY Each asset was identified by the level(s) of service it provides and the current condition of the asset. From there, assets were given a "probably of failure" ("PoF") on a scale from 1 to 5. The City then weighed that against a similar scale quantifying "consequence of failure" ("CoF"). CoF		

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		scores incorporated a triple bottom line approach equally weighing economic, environmental and social consequences. By balancing the PoF with the CoF, the City was able to prioritize urgency of asset replacement distinguishing between those assets needing immediate attention from those that resources can be diverted away from due to unlikely or low consequence of failure.
52		**The Bottom Line** After assessing the current state of City-managed assets, the WAMP goes on to quantify a long range forecast of funding necessary to maintain a baseline level of service. The projections are calculated using a custom-built database which balances refurbishment and replacement costs to keep assets functionally above a minimum acceptable threshold. The result of the long-range forecasting projected a 100 year need of nearly $20 billion (in 2013 dollars). That equates to about $200 million per year, accounting for regulatory compliance, capital and O&M costs. Lastly, the plan articulates various potential funding sources and scenarios for achieving their targeted level of service. Scenarios range from current budget to full funding attainment and layout resulting backlog of needed infrastructure upgrades that would result from each scenario. Insert image- SD spending paths from EPA case study
53		**San Diego's Lessons Learned** The City had to overcome initial skepticism who struggled to look beyond traditional hard assets and look forward to thinking about long term asset life cycle management needs and costs. The process took substantial investment of time and energy. City managers note that it can be difficult to initially persuade a City Council to fund AMP. However, the city found that this up-front investment was more than offset by later savings in maintenance and lower replacement costs by not waiting until asset failure before acting. Finally, AMP linked with financial planning introduces a level of financial transparency that was new to the City. Opening up budget projections to inter-governmental and public scrutiny has the added liability of opposition from adversarial parties. Transparency, however, is an essential part of asset management since its purpose is communicating needs to officials, regulators, and taxpayers. This information is proving critical in ongoing discussions with the permitting authority about the length of future permit compliance schedules.
54		For more information about developing AMP capability, please see EPA's AMP Guide and The University of Maryland Environmental Finance Center's "Local Government Stormwater Financing Manual: A Process for Program Reform" https://efc.umd.edu/assets/stormwater_projects/?efc_stormwater_financing_manual_final_(1).pdf
55		**2.5 Working With Fellow Departments to Integrate Stormwater With Other Public Projects** It is critical to engage multiple city departments in planning and implementing a stormwater program and pursue opportunities to integrate stormwater management with other public projects. Multi-purpose projects can save money and yield many economic, environmental, and social benefits. In this section we describe some key considerations in engaging in city department partnerships.
56		**Interconnected Infrastructure** Due to the unique complexities of stormwater systems, stormwater management should reflect the interconnected nature of a community's infrastructure. Stormwater infrastructure often intersects with assets managed by multiple city departments, such as public works, engineering, streets, highways, water and sewer, recreation, parks, planning and economic development.

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		Developing a plan that recognizes and promotes interconnection with your community's infrastructure can yield significant financial, social, and environmental benefits to both stormwater programs and the partner departments.
57		**Working Together to Share Goals and Risk** Related city departments may share related goals, share risks and take advantage of what each partner does best in order to achieve desired performance goals and objectives. Multi-benefit stormwater projects can maximize regional, watershed-wide benefits, encourage cost-sharing, meet regulatory obligations and promote widespread stakeholder support.
58		**Coordination Can Be Cost-Effective** Integrating stormwater management into capital improvement plans for transportation, parks, or other department infrastructure investments has the potential to lower overall project costs by: - reducing the need for independent project planning, design, environmental review, and construction, and - enabling coordination in scheduling work to avoid separate construction events on the same streets. This approach can also encourage cost-sharing both of capital and O&M costs. Moreover, multi-benefit projects can often compete for multiple sources of funding (e.g. transportation and water quality grant funds for a complete streets project).
59		**Identifying Potential Partners** To help identify potential partners, become aware of sister departments that manage land or projects adjacent to the locations of your stormwater assets, and stay up-to-date on capital improvement planning projects across all departments within your community. Partnering with a sister department can save money because the municipality already owns and maintains the property so there are no land acquisition costs or easements required. The municipality may already perform long-term maintenance on the property so maintenance costs for green infrastructure, for example, may be reduced.

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60	Insert Image	Potential public partners to engage include: • Water and Wastewater • Transportation departments • Parks departments • Department of natural resources • Business improvement districts • Local executive office (mayor, commissioner, etc.) • Schools and universities • City planners and developers • Sustainability agencies

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		• Operations and maintenance departments
61	Text	Other important partners to engage include: • Finance and funding partners • Neighborhood and community associations • Community outreach partners • Local businesses
62		**Learning About Opportunities to Integrate Stormwater Management With Other Projects** There are many excellent sources of information about how to design multi-benefit projects that address stormwater management and other management goals. *Stormwater and Transportation Projects*: National Association of City Transportation Official (NACTO)'s Urban Street Stormwater Guide, Smart Growth America's Greening the Streetscape: Complete Streets and Stormwater Management, and EPA's Managing Wet Weather with Green Infrastructure Municipal Handbook: Green Streets. *Green Infrastructure and Parks:* EPA's Green Infrastructure in Parks: A Guide to Collaboration, Funding, and Community Engagement and the Trust for Public Land's City parks, clean water Making great places using green infrastructure. *Stormwater Management in Economic Redevelopment Projects:* Smart Growth America, City Green: Innovative Green Infrastructure Solutions for Downtown and Infill Locations, and Harvesting the Value of Water Stormwater, Green Infrastructure, and Real Estate. *Integrating Stormwater Management in Schools:* EPA's STORM SMART SCHOOLS: A Guide to Integrate Green Stormwater Infrastructure to Meet Regulatory Compliance and Promote Environmental Literacy and Teach, Learn, Grow: The Value of Green Infrastructure in Schoolyards. *Public-Private Partnerships:* Chapter 6 discusses how public-private partnerships can be designed to fund and implement multi-objective projects with private property owners and investors. (LINK)
63		**Conclusion** Thorough program planning will help you in many ways: *Program Direction and Management:* Taking the time to develop a ~~comprehensive~~ long term stormwater plan and developing relationships with fellow departments and partners helps clarify your purpose, direction, and needs. It also helps identify opportunities for project partnerships. *Financial Planning and Fundraising:* The planning effort also provides critical input for development of a robust financial plan by: - indicating what needs to be accounted for in estimating program costs, - projecting when funding will be needed for different purposes, - determining the right mix of funding sources that will align with your program needs.

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Need to add sources?

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